

DOCUMENT RESUME

ED 347 693

EA 024 145

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TITLE School Level Factors Predicting Teachers' Senses of Professional Engagement, Efficacy, Commitment, and Job Satisfaction: An Application of Structural Equation Modeling. Draft.
PUB DATE 91
NOTE 39p.
PUB TYPE Reports - Research/Technical (143)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Collegiality; Elementary Secondary Education; Institutional Characteristics; Interprofessional Relationship; *Job Satisfaction; Models; *Organizational Climate; *Participative Decision Making; *Structural Equation Models; *Teacher Attitudes; *Teacher Effectiveness; Teacher Responsibility

ABSTRACT

Findings of a study that identified the school-level factors that affect teachers' dispositions toward their work are presented in this paper, which focuses on teacher satisfaction, professional engagement, commitment, and efficacy. Data were derived from the teachers' survey portion of the Teachers and Administrators Survey (ATS) from the High School and Beyond (HS&B) longitudinal study of American schools. The ATS consists of a subsample of 532 schools in the original HS&B sample of 1,015 schools and provided 2,704 usable teacher surveys. Structural equation modeling, particularly the LISREL statistical program, was used to generate two classes of constructs: (1) outcome constructs, which looked at teachers' perceptions; and (2) predictor constructs, which indicated teachers' assessments of school culture. Findings indicate that relational constructs were the most important predictors of teachers' dispositions toward their work. Supraschool factors were major determinants of the quality of teachers' relations with administrators, staff, and students. Recommendations are made to establish a caring school community, to provide supportive school leadership, and to promote school initiatives that encourage shared decision-making and professional interaction. Four figures and three tables are included. The appendix lists the constructs and their indicators. (43 references) (LMI)

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DRAFT

School level factors predicting teachers' senses of professional engagement, efficacy, commitment, and job satisfaction: An application of structural equation modeling.

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The question of what can be done to improve American secondary education has been addressed in many different ways. One of the most promising avenues of research has focused on the central role of teachers in education, and on the effect of schools as a context for teachers' work. Research reviewed by McLaughlin and Talbert (1990) led them to view effective teaching as "the product of individual attributes and the settings in which teachers work and learn to teach" (p.2). While efforts to improve the individual attributes of teachers have centered on determining educational and certification requirements, the school as a setting for teachers' work and continuing professional growth has been the subject of lively inquiry and reform efforts.

Interest in the school as the context for teaching has increased steadily in the past several decades, spurred both by interest in effective schools and, more recently, by the reform reports of the eighties. These reform reports (Boyer, 1983; Carnegie Foundation for the Advancement of Teaching, 1988; Carnegie Forum on Education, 1986; Darling-Hammond, 1984; Goodlad, 1984; National Commission on Excellence, 1983; Sizer, 1984) have drawn attention to school environment through their concern with the quality of teachers and of teaching. In particular there has been a general recognition of the difficulty and importance of attracting bright people into the teaching profession, of retaining the most talented and successful teachers, and of increasing the productivity of all classroom teachers (Cohn, 1987). A nation at risk (National Commission on Excellence in Education, 1983) labels working conditions for teachers "unacceptable," and this assessment is restated with differing emphases in each of the reports.

One of the ironies of this interest in identifying optimal working conditions for teachers, is the relative absence of teachers' own voices. Until recently very few studies that focused on what *teachers* identify as crucial factors in their work lives (Fieman-Nemser and Floden, 1986). Lightfoot (1983) writes "It is their

closeness to students and their direct engagement in the education process that makes teachers the primary adult actors in schools and the critical shapers of institutional goodness (p.334)." This significant role of teachers is also acknowledged by the authors of Report card on school reform: The teachers speak (1988), in their plea for recognition that

whatever is wrong with America's schools cannot be fixed without the help of those already in the classroom. ...To talk about recruiting even better students into teaching without examining the circumstances that discourage teachers is simply a diversion. (p.11)

It is this question of what are the "circumstances that discourage teachers," or, alternatively, what are the circumstances that support teachers and encourage their best work with students, that has generated a solid opus of research dedicated to understanding teaching and schools as contexts for teaching from the teachers' point of view (Johnson, 1990; McLaughlin & Talbert, 1990; Little, 1990; Metz, 1990; and many others).

Johnson (1990) firmly directs our attention to teachers' work with their students as the core of their work lives. She finds that teachers are not discontent because they are confined to teaching, but because they are prevented from teaching well. McLaughlin and Talbert, in discussing effective teaching, emphasize the importance of "how teachers think and feel about what they do" (p.3) in supporting or undermining effective practice. They find that these teacher dispositions toward their work (a category in which she includes such things as motivation, conception of task, enthusiasm for subject matter, and sense of efficacy) are very strongly influenced by the contexts of teaching, which includes not only the school workplace, but also supra-school elements such as the larger societal and community culture, and intra-school elements such as subject area departments.

THE MODEL

It is based on this literature, that I ask: "What are the school-level factors that affect teachers' dispositions toward their work?" I am beginning with the assumptions that (1) teachers' thoughts and feelings about their work have a profound effect on their teaching, and, in turn, on the educational experience of their students; and that (2) the school workplace, as a context for teaching, plays a major role in shaping teachers' dispositions toward their work.¹ I use as my data base a large, nation-wide survey of teachers, which consists of teachers' responses to a series of questions about their perceptions of their schools and their feelings about their work.² Because these are individual teacher responses describing their assessments of, or their feelings about, their individual work settings, these data report teachers' experiences of their individual school and intra-school teaching contexts.³ This data set, then, allows me to explore a nation wide sample of teachers' feelings about their work and their individual experiences of their schools as workplaces in 1984.

Working with this data set and reports in the literature, I have designated these teacher dispositions, or feelings, as associated with effective practice:

- (1) Feeling a sense of satisfaction in their work, such that they look forward to and enjoy their teaching experience (Goodlad, 1984; Bryk & Driscoll, 1988).
- (2) Feeling a professional engagement and pride in their work: they have high standards for themselves and are continuing to learn and gain in expertise as they practice (Johnson, 1990; Chubb & Moe, 1990; Little, 1990).

¹In the interests of clarity, I have chosen to model only the effects of school and intra-school factors on teachers' dispositions toward their work. It is clear from my results, however, that those supra-school factors mentioned as important by many researchers (Johnson, 1990; McLaughlin & Talbert, 1990 among others) do indeed play a large role in shaping the school as a workplace for teachers.

²Teachers and Administrators Survey (ATS) associated with the High School and Beyond (HS&B) longitudinal survey of American high schools

³ Analysis of variance shows that the amount of variance in the variables used in this study that was associated with teachers' school membership ranged from .0765 to .2617 (median = .1241), so that there clearly is an effect of school membership in addition to an effect of teachers' individual experiences within schools.

(3) Feeling a sense of commitment to teaching: they feel that working with their students is worth their time and effort (Dworkin, 1987; Lortie, 1975; McLaughlin & Marsh, 1978).

(4) Feeling a sense of efficacy: they are able to teach their students and they feel a measure of success in their efforts (Cohn, 1987; Paule, 1986; Johnson, 1990; McNeil, 1988; McLaughlin & Marsh, 1978).

These teacher dispositions, in turn, have been found to be associated with a number of different school level factors. Chief among these are the quality of teachers' relationships with administrators (Fruth, 1982; Brodinsky, 1983; Bacharach, 1986; Lieberman & Miller, 1984; McNeil, 1988), their fellow staff (McLaughlin & Yee, 1988), and their students (Metz, 1990); their sense of control over their work lives (Sakarov & Farber, 1983; Louis, 1988); and their participation in shared decision making and professional problem solving (Little, 1972, 1990; Cohen, 1973; Ashton & Webb, 1986). Specifically, the school level factors chosen for inclusion as predictors of teachers dispositions in this model include:

(1) Teachers' perceptions of school leadership (principals or other chief administrators), as caring and concerned, as sharing decision making with teachers, and as being "directive" (having clear educational goals, and communicating their expectations well).

(2) Teachers' perceptions of staff collegiality and solidarity.

(3) Teachers' perceptions of their students' capacities and attitudes.

(4) Teachers' perceptions of their level of control over school level policy, both academic and nonacademic.

(5) Teachers' perceptions of their level of professional interaction with fellow staff members.

(6) Teachers' perceptions of their students' classroom behavior.

(7) Teachers' perception of their level of control over classroom policy.

THE DATA BASE

My source of data is the Teachers' Survey portion of the Teachers and Administrators Survey (ATS) (Moles, 1988) from the High School and Beyond (HS&B) longitudinal survey of American high schools (Jones, 1983; Jones, Knight and Ingels, 1985). These data are well suited to my purposes, first because the teacher survey items are addressed to teachers and seek their perceptions of their work world. Secondly, because the data collection was designed originally to explore effective school parameters, the survey contains many items that seek teachers' perceptions of their schools' culture, their students, their interactions with colleagues, and their views of their schools' leadership.

The ATS consists of a subsample of 532 schools from the original HS&B sample of 1,015 schools. This data set was split in such a way that half of teachers in each school were randomly placed in one of two separate data sets: EXPLORE (n=5182), which was used for model development, and TEST (n=5183), which was reserved for purposes of cross-validation. Splitting teachers within schools allowed for the maintenance of the stratified nature of the sample design. The data set was further reduced by my choice to limit this analysis to school factors that affect *public school* teachers' senses of engagement, commitment, efficacy, and job satisfaction; and by removing schools with fewer than three teachers responding, and schools that were far outliers on several school characteristics. Listwise deletion in the creation of the covariance matrix used as data in the LISREL analysis (retaining only those teachers who responded to all 25 indicators in the model) reduced the final teacher sample in the EXPLORE data set to 2704 teachers.

METHODOLOGY

I have chosen to use structural equation modeling, specifically the LISREL statistical program (Joreskog and Sorbom, 1988), for this study. This methodology allows me to model the experiences of teachers more realistically in the following ways:

(1) The question I posed in this study: "What are the school-based factors that predict teachers' senses of professional enthusiasm, efficacy, commitment, and job satisfaction?" is a complex one. In thinking about teachers' lives in schools, it becomes clear that different elements in the environment do not exist and have their effects in isolation from one another. Teachers' perceptions of their schools' administrations (their care and concern for faculty, their directiveness, their sharing of decisions important to the teachers), their perceptions of staff collegiality and solidarity, their perceptions of the amount of professional interaction among faculty, their perceptions of the degree of control they exercise over school-wide policy, or over classroom policy, their perceptions of their students (both their attitudes and capabilities and their behavior in classes) -- all of these may be expected to impinge not only teachers' senses of professional enthusiasm, efficacy, commitment, and job satisfaction but also, in complex ways, on each other. Rather than simple associations, our experience in schools suggests a web or network of relationships among these constructs. Structural regression analysis allows the modeling of such complex webs of relationships among constructs.

(2) A second issue is: How can these constructs that I have described in the previous paragraph be conceptualized? In the HS&B/ATS data set I have a number of indicators measuring each of the general areas of concern I have listed. Confirmatory factor analysis, as a preliminary step to structural equation modeling, allows the creation of latent constructs that are conceptualized as

being the underlying, unmeasured, constructs that are responsible for the answers teachers give to the specific, measured, questions.

(3) Another concern arising from the use of these data is that errors of measurement are an inextricable part of teachers' responses. Unlike usual statistical procedures, confirmatory factor analysis and structural regression analysis permit the explicit modeling and estimation of measurement error.

The General Plan of the Analysis

Using both substantive considerations and cluster analysis, I selected a group of variables from the ATS data with which to build one measurement model representing each of the predictor and outcome constructs to be included in the structural equation model.

Before I began the process of model building, I divided this data set into two random halves (by school, in order to maintain the sample stratification) and set one half aside to be used as a sample to cross-validate my final model. I used the other half of the data set in the inductive process of model building that I outline here. LISREL models are based on the multiple relationships among all of the variables included in the models, their covariances, rather than on values associated with individual variables; for that reason, the data on which each model is based is a covariance matrix for the variables included in the model.

I began by creating a measurement model for each of the predictor and outcome theoretical constructs. These contained multiple indicators (the measured variables I believed to be associated with the theoretical construct) and one or more hypothetical latent constructs (presumed to represent the underlying "true" theoretical construct(s) responsible for the fallibly measured variables). When all of the theoretical constructs had satisfactory measurement models, these models were pooled into one large measurement model to examine

possible associations of observed indicators with constructs other than those with which they were primarily associated. I then built a structural equation model to describe the relationships among the predictor constructs and the outcome constructs of professional enthusiasm, efficacy, commitment, and job satisfaction. In each of these steps, iterative respecification and reestimation of models was necessary to achieve adequate fit. The final result of this process is a model that is in close agreement with the "patterning of observed, associational relations" (Biddle and Marlin, p.9) among the indicators in this data set. The work of model building, as briefly outlined here, is clearly an inductive process. Consequently, I cross-validated the obtained model in the second half of the data set reserved for that purpose.

How Do We Know If A Model "Fits"?

Confirmatory factor analysis and structural equation modeling differ from most statistical procedures in that it is by comparing the observed covariance matrix with the covariance matrix implied by our model that we judge the fit of the model to the observed data (Bollen, 1989, p.v). Given the basic structure of the model as supplied by the user, the procedure estimates the parameters that describe the relationships between observed indicators and their latent constructs, error variances, and relationships among constructs in such a way as to minimize the difference between the observed covariance matrix and the matrix implied by the model.

Because the estimation procedure involves finding values that will allow the closest approximation to the observed covariance matrix, we are interested in *goodness of fit* and therefore our aim is to *fail to reject* the null hypothesis that the population covariance matrix implied by the model could have given rise to the observed covariance matrix. Ordinarily, the chi-square goodness of fit statistic

would be appropriate for this task, however, difficulty arises when very large samples are used.

The power of the chi-square test increases sharply with increased sample size. As a result, with large samples the chi-square statistic may be significant, leading to rejection of a model, when the difference between [the implied matrix] and [the observed matrix] is trivial. (Hoyle, date, p.15)

This failure of the chi-square goodness of fit test to provide a reliable assessment of model fit has lead to the invention of a number of other statistics aimed at filling the gap. In my study, I picked a subset of criteria to employ. There are three major, and somewhat distinct issues: (a) the goodness of fit of the model -- specifically, how well does this model account for the covariances of the observed indicators; (b) what is the predictive capacity of the model -- how well does it predict the outcome indicators, what is its substantive usefulness? (c) Given the inductive nature of model development, what guarantee is there that the model does not simply fit the particular sample idiosyncratically?

In the first case, the matter of goodness of fit, I have relied primarily upon the Tucker-Lewis statistic (T-L) which compares the difference between the fitted model and a null model with the difference between the null model and a model with the best possible fit (Tucker and Lewis, 1973). There is no commonly agreed upon value for the T-L statistic that describes when the model fits satisfactorily. Bentler and Bonett (1980) propose .90 as an adequate value of their normed fit index, and suggest that this value is probably too low to indicate a good fit with the T-L statistic. In my model building, I have considered a Tucker-Lewis value of .95 or better as evidence of good fit. The Q-Q Plot was also examined to determine if the assumption of normally distributed residuals was met (Hayduk, 1989, p.171).

The second issue, that of the predictive power of the model, is open to similar judgments as those applied to the R^2 statistic of regression analyses. In

social science research, an R^2 of .30 is deemed a moderate effect, while an R^2 as large as .50 is rarely reported and is considered a very strong effect. Because the structural regression equation methodology allows for the expression of a network of effects and the examination of relationships among underlying constructs free from measurement error, we might expect to explain more of the variance of outcome constructs using this methodology than is common in simple or multiple regression models. Additionally, only those predictive paths whose standardized beta coefficients were significant at the $p < .05$ level were included in the fitted model.

The third issue, that of generalizability, was addressed by cross-validating the model in the second half data set.

The Issue of Causality

Structural equation modeling is often referred to as "causal modeling," giving the impression that it is possible with this methodology to discern causal relationships among constructs. However, given that this type of analysis is based on covariances among variables whose values were collected in a natural setting on a single occasion, the demonstration of causal relationships cannot be claimed in structural equation modeling any more than in other forms of multivariate analysis. It is extremely important to check the validity of the findings of studies such as this one by comparing them with those of other researchers from their studies of teachers in schools. Thus previous research and theory play a major role not only in the development of the structural equation model but also in its interpretation and in the assessment of its validity.

Description of measurement models

The individual measurement models that were used to create the final structural model represent two classes of constructs: outcome constructs that represent teachers' perceptions and feelings identified in the literature with productive and successful teachers; and predictor constructs that represent teachers' assessments of characteristics of the school environment and culture. Together, there are four outcome constructs and ten predictor constructs for a total of fourteen constructs in the final structural model. Tables 1 and 2 in the Appendix list these constructs and the original ATS variables they represent.

RESULTS

General description of the structural model

The full structural model describing the relationship among all of these latent constructs fit well ($df=244$, $\chi^2=625.21$, $GFI=.982$, $NO=2704$, $\chi^2/df=2.56$, $T-L=.9539$), and did a very good job of explaining the variance of the outcome indicators ($R^2_{EFF}=.611$, $R^2_{COMMIT}=.641$, $R^2_{ENTHSM}=.630$, $R^2_{SAT}=.870$). The ten latent constructs describing teachers' perceptions of school administration (CARE, DRCTV, SHARE), staff collegiality and solidarity (STFF), their level of control over school policy (CNTRLNAC, CNTRLAC), the level of their professional interaction with their colleagues (PRFINT), their perceptions of their students' attitudes and capabilities (STDNT) and their classroom behavior (CLASS), and their level of control over classroom policy (CNTRLCP) account for 61% of the variance in their sense of efficacy (EFF), 64% of the variance in their sense of commitment (COMMIT), and 63% of the variance in their sense of professional engagement (ENGAGE). All of these constructs together account for 87% of the

variance in teachers' sense of job satisfaction (SAT). Clearly, for these public school teachers in 1984, perceptions of the elements of their school life are very powerful predictors of their attitudes toward their work: their sense that they are accomplishing something, their sense of commitment to their work, their engagement and pride in their work, and their sense of satisfaction.

A representation of the fitted structural model is shown in Figure 1. In this representation, the latent constructs are shown as circles with the construct name and the proportion of variance explained (R^2) enclosed in the circle. (All indicators have been omitted from this representation in the interest of clarity.) The dotted lines enclosing groups of constructs indicate constructs that are interrelated in a nonpredictive way, expressed via residual covariance. The lines between constructs indicate predictive relationships, with the arrow head showing the predictive direction and the numbers on the lines the strength of the predictive relationship described by standardized beta coefficients (units of standard deviation difference in the predicted construct per one unit standard deviation difference in the predictor construct). Figure 1A is a more schematic representation of the same model. In this figure the width of the lines connecting the constructs is proportional to the magnitude of the standardized effect coefficients, and size of the gray area inside each construct circle is proportional to the amount of variance of the construct explained by the model. Negative effects are indicated by dotted lines.

Referring back to the criteria for model "fit," the close similarity of the model predicted covariance matrix and the observed covariance matrix (T-L statistic = .9539) indicates that this representation of the effects of school level factors on teachers' dispositions toward their work is a plausible one. Second, the fact that such a large proportion of the variance in the outcome constructs of efficacy, commitment, professional engagement, and job satisfaction are predicted favors

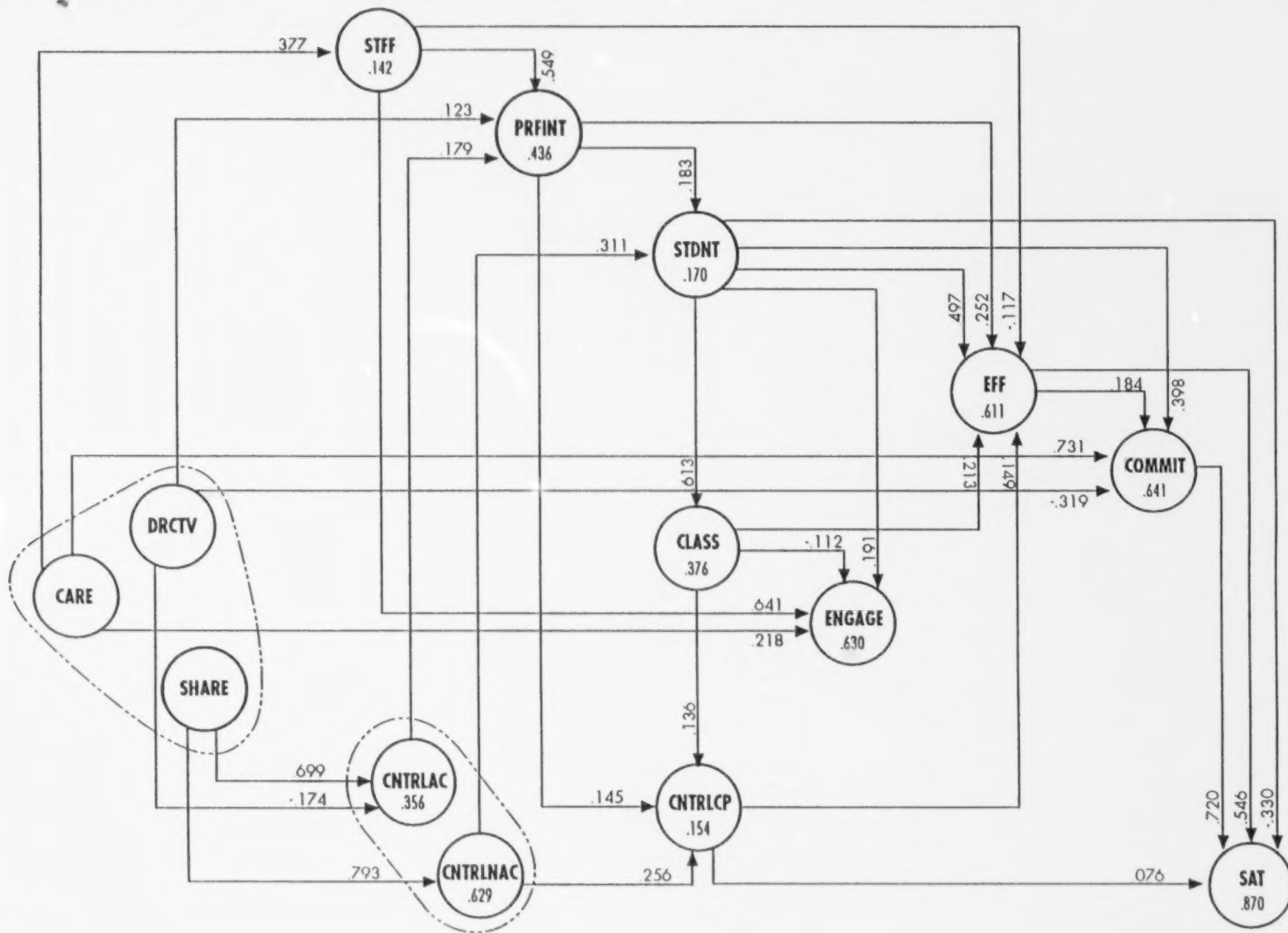


Figure 1

Final structural model showing estimated standardized β coefficients and construct R^2 statistics.
Observed indicators are omitted from this representation.

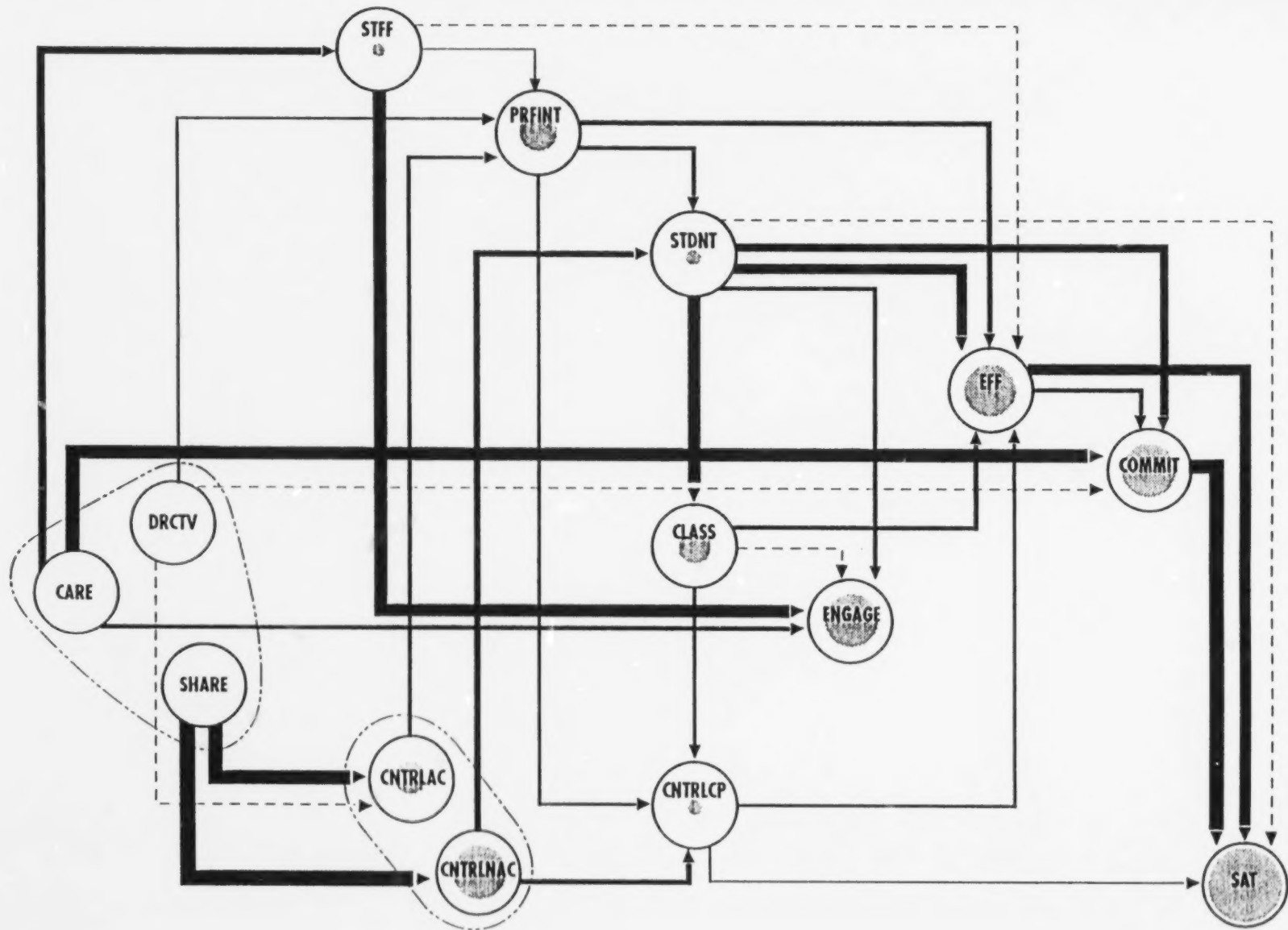


Figure 1A

Graphic representation of the final structural model.
 The thickness of vectors is proportional to the strength of the effect.
 The size of the gray area inside the construct circle is proportional to
 the amount of the variance of that construct explained by the model.
 The dotted lines group related constructs.

our acceptance of this model. Finally, the cross-validation of this model using the reserved half-data set, TEST, ($df=244$, $\chi^2=2827.72$, $\chi^2/df=3.39$, $T-L=.9324$) indicates that the model is generalizable, and not dependent upon the idiosyncrasies of the data with which it was developed.

In addition to the general characteristics of fit and prediction, the graphic representation of the model in Figures 1 and 1A also provides other information. Although we cannot infer causality from cross-sectional data collected in a natural setting, the placement of constructs in this model does tell us, within the stated limits of data collection, which construct in any given relationship is predicted more strongly than it predicts. The arrows in Figures 1 and 1A go from the stronger predictor of a pair of constructs toward the construct more strongly predicted. Thus, SHARE, teachers' perception of shared decision making, predicts CNTRLNAC, teachers' perception of their level of control over nonacademic school policy, more strongly than CNTRLNAC predicts SHARE.

This predictive flow is evident on a larger scale in the placement of the constructs from left to right across the page in the graphic representation of the model (Figures 1 and 1A). Thus the leadership constructs, at the far left, predict other constructs in the model more than they are predicted. Teachers' perceptions of their students (STDNT), however, is more centrally placed in the graphic representation. Its placement indicates that it is more strongly predicted by leadership, staff collegiality, control over school policy, and professional interaction (the constructs to its left) than it is predictive of these constructs. In like manner, STDNT is more predictive of the constructs to its right than it is predicted by them. The model, then, suggests a hierarchy of prediction among school level predictor constructs as well as indicating their prediction of the outcome constructs.

Total Effects

In order to see the complete effect of predictor constructs on each other and on the outcome constructs, it is necessary to take into account not only the direct effects of one construct on another as illustrated in Figures 1 and 1A, but also to consider the indirect effects that pass through other constructs. A clear illustration of the importance of examining total effects rather than direct effects alone can be seen in the effect of teachers' perception of their students (STDNT) on their sense of job satisfaction (SAT). The direct effect of STDNT on SAT is a moderately strong negative one: every positive unit standard deviation difference in teachers' perception of their students is associated with a negative .330 standard deviation difference in their sense of job satisfaction. The more positively teachers view their students, the less satisfied they are with their jobs! This intuitively unsatisfying conclusion is also incorrect, for it fails to consider the very strong positive effects of STDNT on teachers' sense of commitment (COMMIT), their sense of efficacy (EFF), and on their perception of their students' classroom behavior (CLASS). All three of these constructs, directly or indirectly, are positive predictors of teachers' sense of job satisfaction. Thus, when both direct and indirect effects are considered, teachers' perception of their students is a strong positive predictor of their sense of job satisfaction (standardized total effect = .397). Table 1 presents the standardized total effects of the predictor constructs on the outcome constructs, and Table 2 the standardized total effects of the predictor constructs on each other.

The major findings evident in examination of the total effects in conjunction with the graphic representation of the full model are as follows:

- The representation of the prediction of teachers' dispositions toward their work by school level factors as an interconnected web of predictive relationships is both plausible and powerful.

TABLE 1

Total Effects on Outcome Constructs from Predictor Constructs
(in decreasing order of magnitude of effect)

<u>PREDICTOR CONSTRUCTS</u>	<u>OUTCOME CONSTRUCTS</u>			
	<u>ENGAGE</u>	<u>EFF</u>	<u>COMMIT</u>	<u>SAT</u>
CARE	.464	.037	.753	.552
STDNT	.122	.640	.516	.397
STFF	.653	.097	.058	.069
EFF	.000	-----	.184	.678
PRFINT	.022	.391	.145	.269
COMMIT	.000	.000	-----	.720
CNTRLNAC	.038	.238	.168	.169
SHARE	.033	.237	.151	.168
DRCTV	.002	.054	-.302	-.193
CLASS	-.112	.233	.043	.163
CNTRLCP	.000	.149	.027	.176
CNTRLAC	.004	.069	.026	.048

- For these public school teachers in 1984, their perceptions of their school administrators (as caring and concerned, as exercising "directive" leadership, and as sharing decision making) are the prime movers among all of the school level factors included in the model.

- Teachers' perception of their relationships with their administrators, fellow staff, and students (as represented by the constructs CARE, STFF, and STDNT) are the major predictors of their senses of efficacy, commitment, professional engagement, and job satisfaction.

- Although these relational constructs are of major predictive importance, they themselves are rather poorly predicted (in the cases of STFF, $R^2=.142$, and STDNT, $R^2=.170$), or not at all predicted (in the case of CARE) by the other model constructs.

TABLE 2

Total Effects on Predictor Constructs

PREDICTING CONSTRUCTS	STANDARDIZED TOTAL EFFECTS ON PREDICTED CONSTRUCTS						
	CNTRLAC	CNTRLNAC	STFF	PRFINT	STDNT	CLASS	CNTRLC
CARE	—	—	.377	.207	.038	.023	.033
DRCTV	-.174	—	—	.092	.017	.010	.014
SHARE	.699	.793	—	.125	.270	.166	.244
CNTRLAC	—	—	—	.179	.033	.020	.029
CNTRLNAC	—	—	—	—	.311	.191	.282
STFF	—	—	—	.549	.100	.061	.088
PRFINT	—	—	—	—	.183	.112	.160
STDNT	—	—	—	—	—	.613	.083
CLASS	—	—	—	—	—	—	.136

These last two findings indicate that teachers are strongly influenced by the quality of their relationships with those with whom they work, and that a large part of what determines the quality of those relationships is not predicted by school level factors. Consideration of the realities of public school life allows speculation about what supra-school factors might be predictive of teachers' perceptions of their administrators, their fellow staff, and their students. We can imagine, for instance, that district policy or principals' need to satisfy those who hire them may divert them from a central focus on supporting their teachers; that hiring and firing of teachers at a district rather than a school level may prevent the building of cohesive and collegial school staffs; and that community socioeconomic status and cultural attitudes may be strong determinants of teachers' perceptions of their students. Thus, the emphasis on the effect of supra-school elements on teachers'

dispositions toward their work (Johnson, 1990; McLaughlin & Talbert, 1990; Metz, 1990) is justified not only in recognition of their direct effects (as in the effect of teachers' perceptions of the societal status of teaching), but also in recognition of their indirect effects on teacher dispositions toward their work through the school level factors included in this model.

The Reduced Model

Because of the outstanding predictive effects of the constructs representing teachers' relationships with their administrators (CARE), fellow staff (STFF), and students (STDNT) on their dispositions toward their work, I built a model including only those three predictor constructs and the outcome constructs. My purpose was to determine the unique importance of the other predictor constructs (now labeled, as a group, "intervening constructs") by examining the reduction in prediction of the outcome constructs in their absence.

This reduced model is shown in Figures 2 and 2A, and the standardized total effects associated with the model are shown in Table 3. The removal of all of the intervening predictor constructs resulted in a model that fit well ($df=33$, $\chi^2=86.96$, $\chi^2/df=2.64$, $T-L=.9778$) and showed practically no difference in the prediction of any of the outcome constructs except EFF. Even in the case of EFF the decrease in R^2 (from .641 to .525) was not marked, being equal to 14.2% of its value in the full model. This strongly reinforces the evidence presented earlier that it is the relational constructs, CARE, STFF and STDNT, that speak to teachers' relationships with administration, staff, and students in their school that make the biggest difference in their work lives.

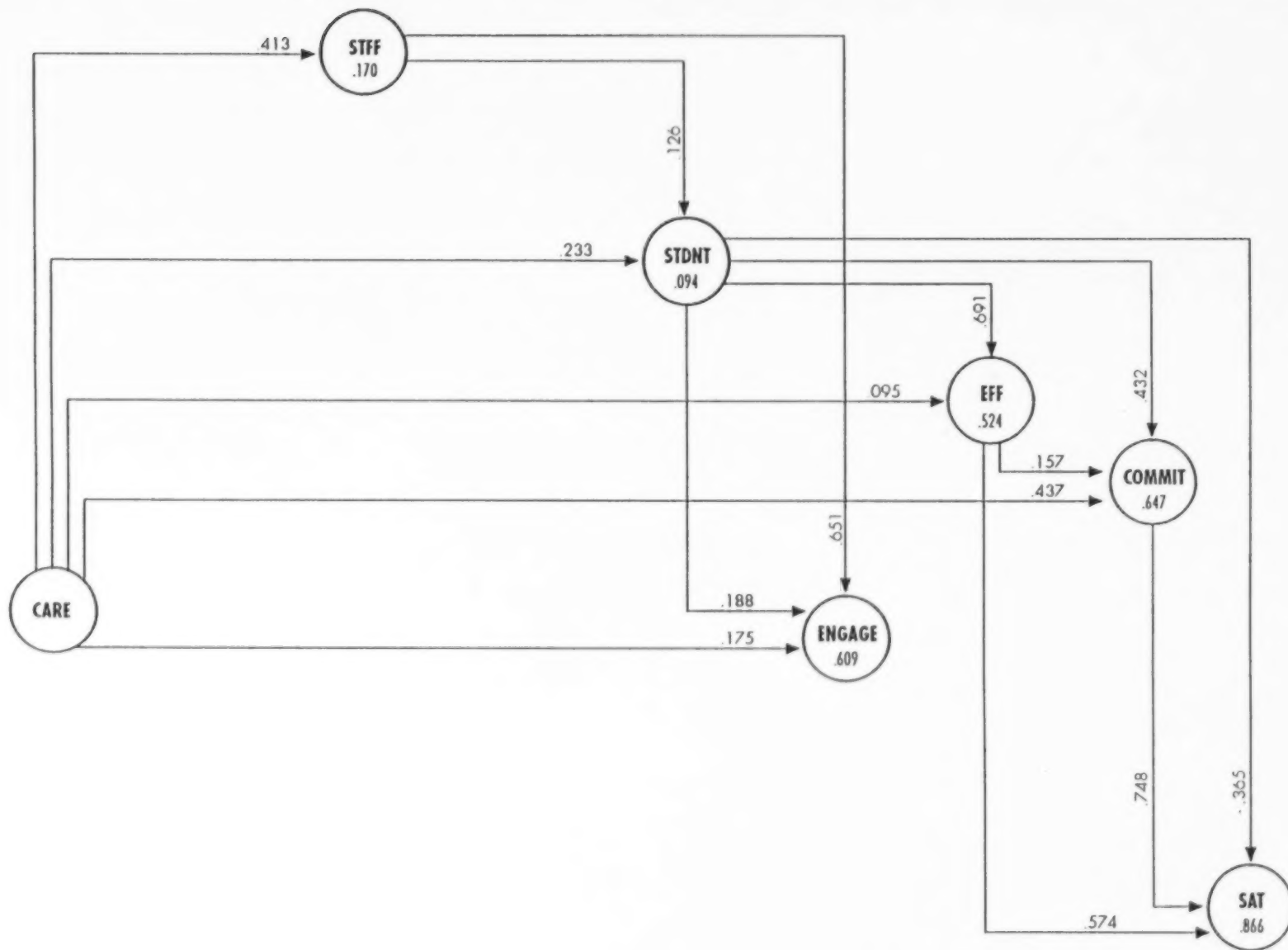


Figure 2

Reduced model showing estimated standardized β coefficients and construct R^2 's.

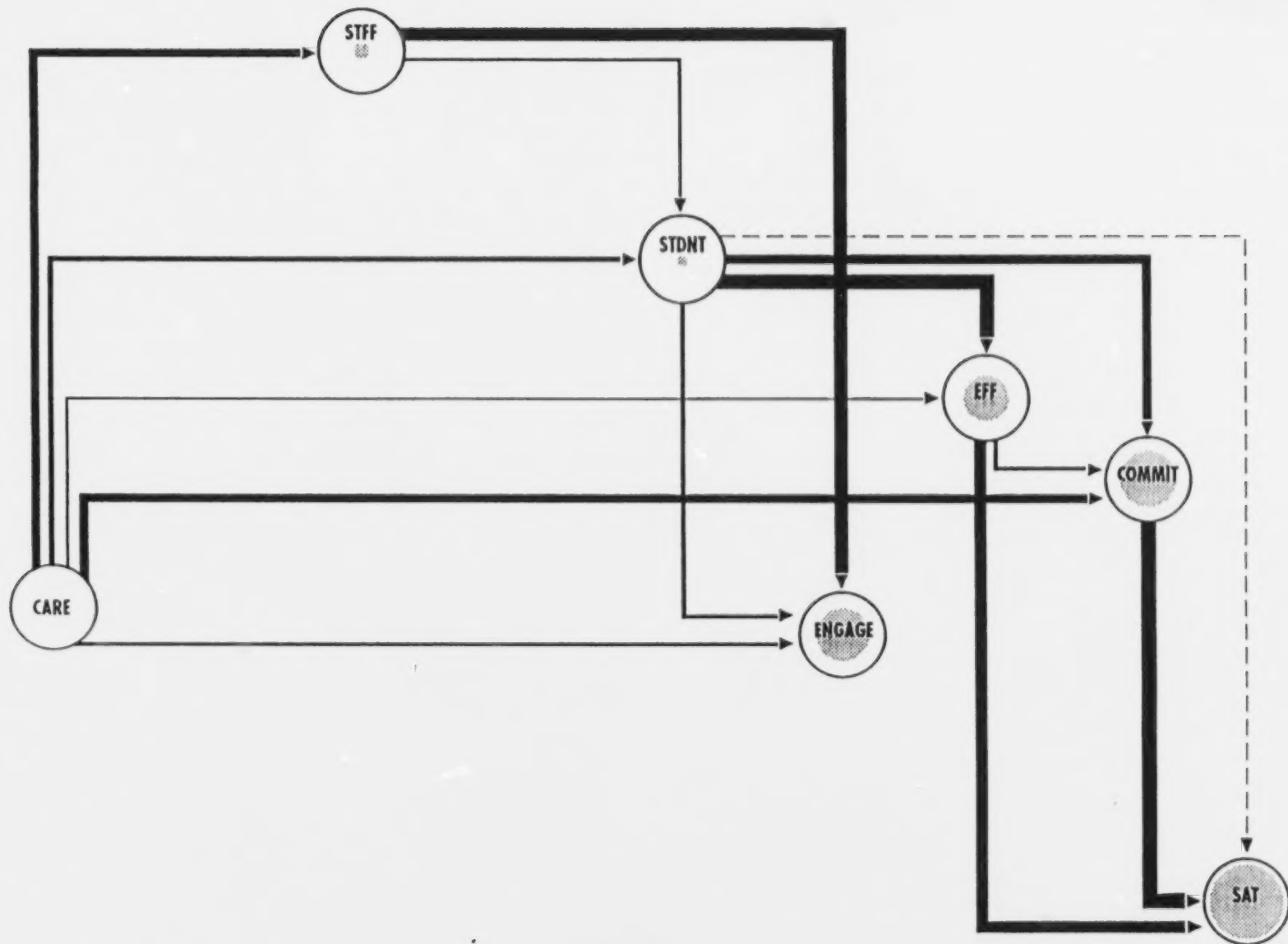


Figure 2A

Graphic representation of the reduced model.
 The thickness of vectors is proportional to the strength of the effect.
 The size of the gray area inside the construct circle is proportional to
 the amount of the variance of that construct explained by the model.
 The dotted line indicates a negative effect.

TABLE 3
Standard Total Effects for the Reduced Model

PREDICTOR CONSTRUCTS	PREDICTED CONSTRUCTS					
	STFF	STDNT	ENGAGE	EFF	COMMIT	SAT
CARE	.413	.285	.478	.292	.606	.558
STFF	—	.126	.666	.087	.068	.055
STDNT	—	—	.188	.619	.540	.443
EFF	—	—	—	—	.157	.691
COMMIT	—	—	—	—	—	.748

The Role of the Intervening Constructs

The success of the reduced model also implies that teachers' perceptions of directive leadership, shared decision making, control over school policy, professional interaction, classroom behavior of students, and control over classroom policy are all matters of no real concern in predicting teachers' senses of efficacy, commitment, professional engagement, and job satisfaction. Arguing against this interpretation is the role that the intervening constructs play in the full model. The intervening constructs are responsible for 14.5% of the total prediction of teachers' sense of professional engagement, 64.0% of the total prediction of teachers' sense of efficacy, 36.4% of the total prediction of teachers' sense of commitment to teaching, and 33.0% of the total prediction of their sense of job satisfaction. Given these sizable contributions to the prediction of the outcome constructs by the intervening constructs in the full model, it seems more appropriate to see them not as insignificant predictors of teachers' dispositions toward their work, but rather as instrumental ways in which the positive power of teachers' relationships the administrators, teachers, and students are put into action in the life of the school.

It is not clear whether the lack of unique predictive power in the intervening constructs is a structural and permanent result of their dependence upon the quality of teachers' relationships within the school, or if it is a function of the majority school culture experienced by these public school teachers in 1984. Lortie (1975) and many succeeding researchers described a school culture in which teachers' interests and activities are limited to the classroom, within which they exercise almost complete control, while the school administrators' domain encompasses school life and policy beyond the classroom door. This "egg-carton" culture honors norms of autonomy and independence on the part of teachers, and militates against cooperative professional work (Lieberman and Miller, 1984). Although there are reports in the literature of schools in which cooperative effort and shared problem solving are the norm (Little, 1982; Cohen, 1973; Ashton & Webb, 1986; Rosenholtz, 1989), these schools are the exception rather than the rule, even today.

In schools in which there is neither structural nor normative support for shared decision making or cooperative problem solving, it would not be surprising that the constructs representing shared decision making, control over school policy, and professional interaction among staff are insignificant predictors of teachers' senses of efficacy, commitment, professional engagement, and job satisfaction. What is surprising is that these predictors play the positive role that they do for these public school teachers in 1984. Recall that, in the full model, the intervening predictors were responsible for 64% of all total effects on teachers' sense of efficacy, over 30% of the total effects on both teachers' sense of commitment and their sense of job satisfaction, and 15% of the total effects on their sense of professional engagement. This is certainly a strong argument for the importance of teachers' working together with administrators and with each other in the prediction of, especially, their sense of efficacy, but also their senses

of commitment to teaching and job satisfaction and, to a lesser extent, their sense of professional engagement. It seems reasonable to expect that even more powerful effects of these intervening constructs would be seen in schools in which the structure of teachers' work and the culture of the school validated and rewarded their work together and their participation in the formation of school policy.

DISCUSSION

This examination of what and how school level factors predict those teacher dispositions toward their work that are associated with effective practice has led to five major conclusions:

- It is appropriate and productive to model school factors as an interconnected web of constructs which affect each other as well as predicting teachers' feelings about their work.
- The structural equation model suggests which constructs tend to be more predictive of other constructs than predicted by them. The model indicates that, for these public school teachers in 1984, attributes and behaviors of their school administrators are the prime predictors of other school factors.
- The most potent predictors of teachers' senses of efficacy, commitment to teaching, professional engagement, and job satisfaction are the relational constructs: those that represent teachers' perceptions of their administrators as caring and concerned (CARE), teachers' perceptions of staff collegiality and solidarity (STFF), and teachers' perception of their students' capabilities and attitudes (STDNT). Even in the absence of all other school level factors, these constructs alone continue to predict the outcome constructs at essentially the same level as the full model.
- Supra-school factors, rather than school level factors appear to be the major determining elements in predicting the quality of teachers' relations with their administrators, fellow staff, and students. The relational constructs are either very poorly predicted (STFF $R^2=.142$; STDNT $R^2=.170$) or not predicted at all (CARE) by other model constructs.
- The other constructs in the full model (directive leadership, shared decision making, control over school and classroom policy, professional interaction, and students' classroom behavior) possess very little unique predictive power on the outcome constructs -- that is, power that cannot be assumed by the relational constructs in their absence. They do, however, play an important

predictive role in the full model. They predict 64% of all total effects on teachers' sense of efficacy, over 30% of teachers' senses of commitment and job satisfaction, and 15% of teachers' sense of professional engagement.

These conclusions have implications for both pre-practice training of administrators and teachers and for the structure of schools. They suggest that, if we wish to improve teachers' dispositions toward their work, in the belief that such dispositions are crucial to effective practice, we need to pay close attention to ways of improving teachers' perceptions of their relationships with those with whom they work in schools. Nel Noddings' statement, "To receive and be received, to care and be cared for: these are the basic realities of human being and its basic concern" (1984, p.173), certainly seems to be true for these public school teachers in 1984. Effort to establish a caring community within schools is not a soft-headed, touchy-feely notion -- it is a pragmatic, functional approach to making schools centers of effective teaching and learning. There are numerous actions possible, dealing both with pre-practice training, so that teachers and administrators come into schools prepared and focused on the notion of a caring community, and with school scheduling and the organization of work, so that there is time and appropriate structure in schools to support caring relationships. The fact that these relational constructs are so little supported by other school factors suggests that much of what must be done, must be done at a supra-school level -- one big step would be to free schools from district lock-step, and allow them to concentrate on their own unique needs and problems, and establish their own caring community.

School leadership is clearly very important in this model, being, as it is, the prime predictor of all other school factors. This is certainly in keeping with the findings of many researchers that principals can make difficult situations bearable (Dworkin, 1987), or potentially satisfactory settings miserable (Fruth, 1982; Brodinsky, 1983). Louis (1988) describes principals in US schools as "weak-but-

strong" to indicate the verbal value given to principals' reign over their buildings, but the subordination of the principals' authority to district policy. Those who both hire and fire school administrators might consider charging them with responsibility for the well-being of their school, giving them a free hand in hiring staff and dealing with their unique setting, and then judging them on their success in nurturing the growth of the students and teachers under their care.

Although, for these public school teachers in 1984, such community constructs as shared decision making, control over school policy, and professional interaction held very little unique power to predict teachers' dispositions toward their work, these constructs were important in the full model. The fact that such constructs were responsible for 64% of all total effects on teachers' sense of efficacy shows how productive teachers' working together to solve their problems can be. The public schools of 1984, and, indeed, most of the public schools of today, are not the best places to explore the benefits of community interaction and staff working together to solve difficult educational problems. Too many schools are structured in such a way that teachers are either encouraged or forced to work alone and solve their own problems as best they can. In spite of that, constructs related to shared decision making, control over school policy and professional interaction were important in predicting teachers' senses of efficacy, commitment, professional engagement, and job satisfaction. This is strong encouragement to continue and enlarge upon those school initiatives that encourage, both structurally and normatively, school community, shared decision making, and joint professional problem solving.

BIBLIOGRAPHY

- Ashton, P.T. & Webb, R.B. (1986) Making a difference: Teachers' sense of efficacy and student achievement. New York: Longman.
- Bacharach, S.B., Bauer, S.C. & Shedd, J.B. (1986). The learning workplace: The conditions and resources of teaching. ED279614.
- Bentler, P.M. & Bonnett, D.G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. Psychological Bulletin 88:588-606.
- Biddle, B.J. & Marlin, M.M. (1980) Causality, confirmation, credulity, and structural equation modeling. Child Development 58:4-17.
- Boyer, E.L. (1983). High school: A report on secondary education in America. The Carnegie Foundation for the Advancement of Teaching. New York: Harper & Row.
- Bollen, K.A. (1989). Structural equations with latent variables. New York: John Wiley & Sons, Inc.
- Brodinsky, B. (1983). Building morale, motivating staff: Problems and solutions. Arlington, VA: American Association of School Administrators.
- Bryk, A.S. & Driscoll, M.E. (1988). The high school as community: Contextual differences and consequences for students and teachers. Madison, WI: National Center on Effective Secondary Schools, University of Wisconsin-Madison.
- Carnegie Forum on Education. (1986). A nation prepared: Teachers for the 21st century: The report of The Task Force on Teaching as a Profession. Carnegie Forum on Education and the Economy, May 1986. Washington, DC: The Forum.
- Carnegie foundation for the Advancement of Teaching. (1988). Report card on school reform: The teachers speak. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.
- Chubb, J.E. & Moe, T.M. (1990). Politics, markets and America's schools. Washington, DC: The Brookings Institute.
- Cohen, E.G. (1973). Open space schools: The opportunity to become ambitious. Sociology of Education 46:143-161.

- Cohn, M.M., Kottkamp, R.B., McCloskey, G.N. & Provenzo, E.F. (1987). Teachers' perspectives on the problems of their profession: Implications for policymakers and practitioners. ED286828.
- Darling-Hammond, L. (1984). Beyond the commission reports: The coming crisis in teaching. Santa Monica, CA: The Rand Corporation.
- Dworkin, A. (1987). Teacher burnout in the public schools: Structural causes and consequences for children. Albany: State University of New York Press.
- Fieman-Nemser, S. & Floden, R.E. (1986). The culture of teaching. In Handbook of research on teaching: A project of the American Educational Research Association. 3rd edition. M.C. Wittrock (Ed.). New York: Collier Macmillan.
- Fruth, M.J., Bredeson, and Kasten. (1982). Commitment to teaching: Teachers' response to organizational incentives. Madison, WI: Wisconsin Center for Educational Research, University of Wisconsin-Madison.
- Goodlad, J.I. (1984). A place called school: Prospects for the future. New York: McGraw-Hill.
- Hayduk, L.A. (1987). Structural equation modeling using LISREL: Essentials and advances. Baltimore: The Johns Hopkins University Press.
- Hoyle, R.H. (1990) An Introduction to the use of confirmatory factor analysis in the measurement of hypothetical constructs. Chapter 5. Unpublished manuscript.
- Johnson, S.M. (1990). Teachers at work: Achieving success in our schools. New York: Basic Books, Inc.
- Jones, C., et. al. (1983). High School and Beyond first follow-up (1982) school questionnaire and data file user's manual. Washington, DC: Center for Education Statistics.
- Jones, C., Knight, S. & Ingels, S. (1985). Administrator and Teacher Survey final report. Chicago: National Opinion Research Center.
- Joreskog, K.G. & Sorbom, D. (1988). Lisrel 7: A guide to the program and its applications. 2nd edition. Chicago, IL: SPSS Inc.

- Lieberman, A. & Miller, L. (1984). Teachers, their world, and their work: Implications for school improvement. Alexandria, VA: Association for Supervision and Curriculum.
- Lightfoot, S.L. (1983). The good high school: Portraits of character and culture. New York: Basic Books, Inc., Publishers.
- Little, J.W. (1982). Norms of collegiality and experimentation: Workplace conditions of school success. American Educational Research Journal 19(3):325-340.
- Little, J.W. (1990). Conditions of professional development in secondary schools. In Secondary school workplace, pp. 187-223. ed. M. McLaughlin & J. Talbert, New York: Teachers College Press.
- Lortie, D.C. (1975). Schoolteacher: A sociological study. Chicago: The University of Chicago Press.
- Louis, K.S. (1988). Social and community values and the quality of teacher work life. Paper presented at the meeting of the American Educational Research Association, New Orleans.
- McLaughlin, M. W. & Marsh, D.D. (1978). Staff development and school change. Teachers College Record 80:1.
- McLaughlin, M.W. & Yee, S.M. (1988). School as a place to have a career. In Building a professional culture in schools. A. Lieberman (Ed.). New York: Teachers College Press.
- McLaughlin, M.W. & Talbert, J.E. (1990). The context in question: The secondary school workplace. In Secondary school workplace, pp.1-14. ed. M. McLaughlin & J. Talbert, New York: Teachers College Press.
- McNeil, L. (1988) Contradiction of control and curriculum, Part 2: Teachers, students and curriculum. Phi Delta Kappan 69(6):432-438.
- Metz, M.H. (1990). How social class differences shape teachers' work. In Secondary school workplace, pp.40-107. ed. M. McLaughlin & J. Talbert, New York: Teachers College Press.
- Moles, O. (1988). Ed. High school and beyond administrators and teacher survey (1984): Data file user's manual. Washington, DC: OERI.
- National Commission on Excellence in Education (1983). A nation at risk: The imperative of education reform. Washington, DC: United States Department of Education.

- Noddings, N. (1984). Caring: A feminine approach to ethics and moral education. Berkeley: University of California Press.
- Paule, L. (1986). The curriculum decision environment of high school English, mathematics, science, and social studies departments. University of Oregon.
- Rosenholtz, S. (1989). Teachers' workplace: The social organization of schools. New York: Longman.
- Sakarov, M. & Farber, B. (1983). A critical study of burnout in teachers. In B. Farber (Ed.). Stress and burnout in the human service professions. pp.65-81. New York: Pergammon Press.
- Sizer, T. (1984). Horace's compromise: The dilemma of the American high school. Boston: Houghton Mifflin Company.
- Tucker, L.R. & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. Psychometrika 38:1-10.

APPENDIX

TABLE 1

Outcome Constructs and Indicators

<u>CONSTRUCT</u>	<u>INDICATOR(S)</u>
Teachers' sense of efficacy (EFF)	SCSSEDST :To what extent do you feel successful providing the kind of education you would like to provide for most of your students?
Teachers' sense of commitment (COMMIT)	WASTE: I sometimes feel it is a waste of time to try to do my best as a teacher.
Teachers' sense of professional engagement (ENGAGE)	TCHRLRN: Teachers in this school are continually learning and seeking new ideas. STFFSTDS: Staff members maintain high standards of performance for themselves.
Teachers' sense of job satisfaction (SAT)	LOOKFRWD: I usually look forward to each working day at this school. JOBSAT:How much of the time do you feel satisfied with your job in this school?

TABLE 2

Predictor Constructs and Indicators

<u>CONSTRUCT</u>	<u>INDICATOR(S)</u>
LEADERSHIP	
Teachers' perception of school leadership as directive or strong (DRCTV)	PRNCEXPT: The principal lets staff members know what is expected of them. PRNCSURE: The principal knows what kind of school he/she wants and has communicated it to the staff.
Teachers' perception they have a part in decision making that affects them (SHARE)	STFFDCSN: Staff are involved in making decisions that affect them. PRNCCNSL: The principal seldom consults with staff members before he/she makes decisions that affect us.
Teachers' perception that the administration "cares" (CARE)	ADMKNOWS: This school's administration knows the problems faced by the staff.
STAFF COLLEGIALITY AND SOLIDARITY	
Teachers sense of staff collegiality and solidarity (STFF)	STFFHELP: You can count on most staff members to help out anywhere, anytime -- even though it may not be part of their official assignment. SHRBLFS: Most of my colleagues share my beliefs and values about what the central mission of the school should be.
STUDENT CAPABILITIES AND ATTITUDES	
Teachers' perception of their students' attitudes and capabilities (STDNT)	STDNTCPB: Many of the students I teach are not capable of learning the material I am supposed to teach them. STDNTATT: The attitudes and habits my students bring to my class greatly reduce their chances for academic success.
STUDENT BEHAVIOR IN CLASS	
Teacher's perception of their students' classroom behavior (CLASS)	BEHAVE: On average, what percent of your classes' time is spent getting students to behave? FOOL: During the time devoted to instruction and practicing skills, at any given time, what percentage of the students is whispering, fooling around, appears to be daydreaming, or is not working on the assigned task?

TABLE 2 (continued)

Predictor Constructs and Indicators

CONSTRUCT

INDICATOR(S)

PROFESSIONAL INTERACTION

Teachers' perception of professional interaction among school staff (PRFINT)	COORDCRS: I make a conscious effort to coordinate the contents of my courses with other teachers. OTHCLSS: I am familiar with the content and specific goals of the courses taught by other teachers in my department.
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CONTROL OVER NONACADEMIC SCHOOL POLICY

Teachers' perception of their control over nonacademic school policy (CNTRLNAC)	How much influence do teachers have over school of policy in each of the areas below? STDNTBHV: Determining student behavior codes. CNTNTINS: Determining the content of inservice programs.
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CONTROL OVER ACADEMIC SCHOOL POLICY

Teachers' perception of their control over policy (CNTRLAC)	How much influence do teachers have over academic school policy in each of the areas below? ABLTGRPS: Setting policy on grouping students in classes by ability. SCHCURR: Establishing the school curriculum.
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CONTROL OVER CLASSROOM POLICY

Teachers' perception of control over classroom policy (CNTRLCP)	How much control do you feel you have in your of their classroom over each of the following areas of your planning and teaching? TCHTECH: Selecting teaching techniques. HWASSGN: Determining the amount of homework to be assigned.
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